

4.6 Average Rate of Change &

Solving Systems of Equations by Graphing

Name _____ Date _____ Period _____

Find the average rate of change for each function on the specified interval.

1. $f(x) = 4x^2 + 12x + 9$ on $[-3, 0]$

2. $f(x) = \frac{x-7}{x^2+14x+40}$ on $[-9, -5]$

3. $f(x) = \frac{x^2+x-72}{x^2+5x}$ on $[-4, -1]$

4. $f(x) = \sqrt{x-7}$ on $[7, 11]$

5. $f(x) = \sqrt[3]{x} - 6$ on $[-1, 1]$

6. $f(x) = -\sqrt[3]{x+6} + 2$ on $[-5, 2]$

7. $f(x) = x^4 - 8x^3 + 16x^2$ on $[-1, 3]$

8. $f(x) = \log(x-3) - 4$ on $[4, 13]$

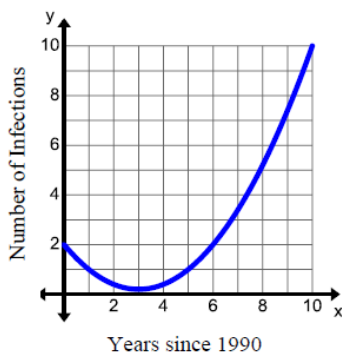
Find the average rate of change on the specified interval and interpret its meaning.

9. The table shows the average annual consumption of cheese per person in the U.S. for selected years. (Source: U.S. Department of Agriculture) What is the average consumption between 1940 and 1995?

Year	Pounds Consumed
1910	4
1940	5
1970	8
1975	10
1995	25
2001	30

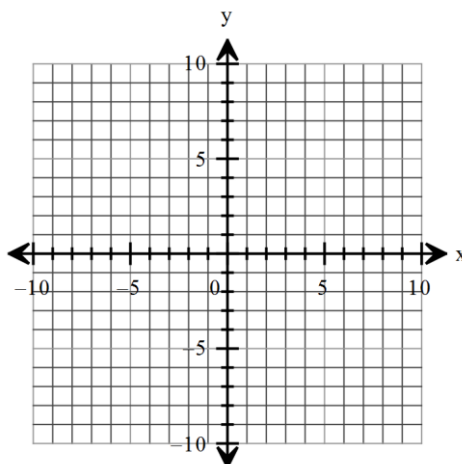
10. The graph below displays the number of infections per month for every 1,000 computers since 1990.

Find the average rate of change from 1991 to 1998.



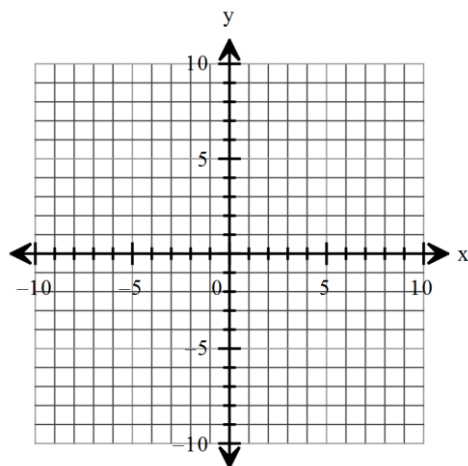
Solve each system of equations by graphing. For each problem sketch each function $f(x)$ and $g(x)$ on one graph and label the intersecting points (solutions).

11. $f(x) = -2x + 4$
 $g(x) = x^2 + 3$



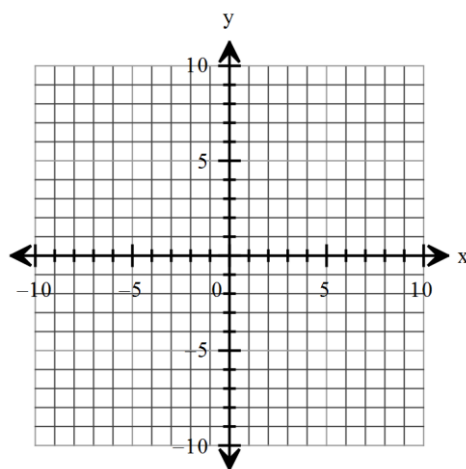
$$12. f(x) = \frac{1}{3}x - 2$$

$$g(x) = x^3 - 3x^2 - 4x$$



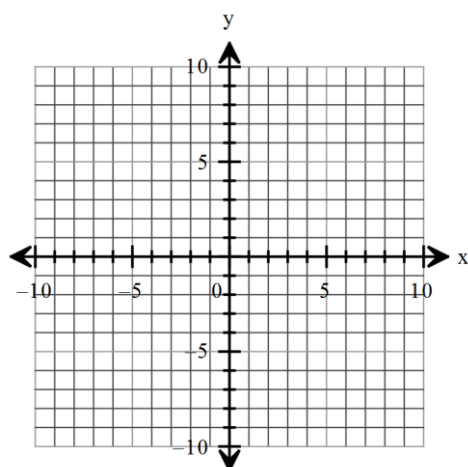
$$13. f(x) = -\frac{5}{2}x + 3$$

$$g(x) = \frac{x-1}{2x+1}$$



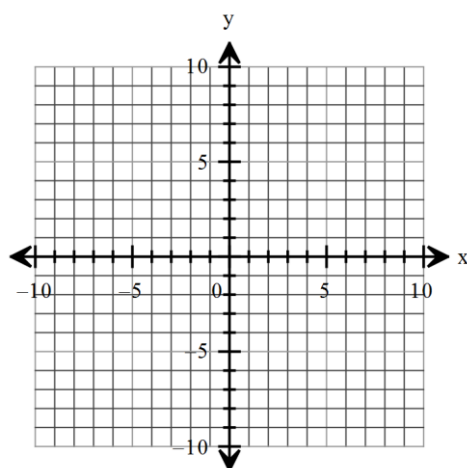
$$14. f(x) = -\frac{3}{4}x + 7$$

$$g(x) = -|x-5| + 4$$



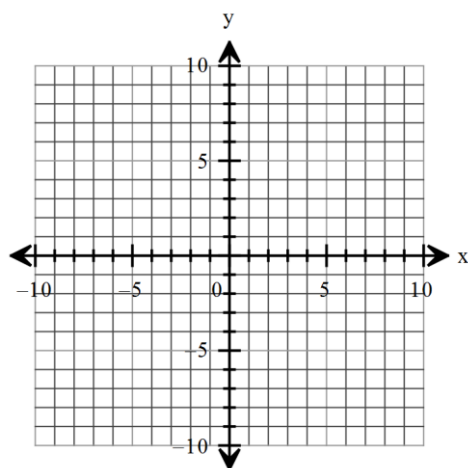
$$15. f(x) = 4x - 3$$

$$g(x) = 3^{x-2} - 5$$



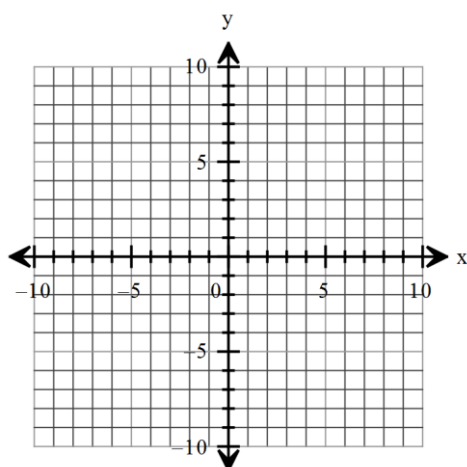
$$16. f(x) = -\frac{1}{10}x + 3$$

$$g(x) = \log(x+2)$$



$$17. f(x) = (x-5)^2 - 3$$

$$g(x) = \frac{1}{5}x^3 - \frac{12}{5}x^2 + 7x$$



Practice Review

Determine whether the infinite geometric series converges. If it does, find its sum.

18. $4 + \frac{4}{3} + \frac{4}{9} + \frac{4}{27} + \dots$

19. $\frac{1}{48} + \frac{1}{16} + \frac{3}{16} + \frac{9}{16} + \dots$

Factor the polynomials.

20. $6x^2 - 108x + 480$

21. $9m^2 + 6mn + n^2$

22. $3x^4 + 375x$

23. $15x^2 + 8x - 14$